REMARKS

These amendments and remarks are in response to the Final Office Action ("Office Action") dated April 6, 2011. This response is accompanied by a Request for Continued Examination (RCE). Applicant requests a three-month extension of time and authorization is given to charge Deposit Account No. 50-0951 for the extension fee, the RCE fee, and any other appropriate fees.

In the Office Action, the Examiner noted that claims 1-6 and 8-12 were pending, and that claims 1-6 and 8-12 were rejected. Claim 7 was previously cancelled without prejudice. Claims 1, 3, 5-6, and 10-12 have been amended. New claim 13 has been added. In view of the arguments set forth below, claims 1-6, and 8-13 are allowable, and the Examiner is respectfully requested to withdraw the rejections and issue a Notice of Allowance.

I. Rejections under 35 U.S.C. §103

In the Office Action, claims 1-6 and 8-12 were rejected under 35 U.S.C. §103(a) as being unpatentable over PCT Publication No. WO 03/095060 to Gandolfi et al. ("*Gandolfi*"), in view of European Patent Publication No. 60238492 to Nagano ("*Nagano*"). In particular, the Examiner stated that *Gandolfi* discloses a tube bundle heat exchanger for treating corrosive fluids comprising at least one tube composed of titanium, but admitted that *Gandolfi* does not disclose a hot-drawn or welded layer of zirconium. The Examiner stated that *Nagano* could be used to modify *Gandolfi* by hot-drawing or welding the layer of zirconium onto the titanium tube of *Gandolfi*.

Applicant respectfully traverses the rejections, and submits that the claims are patentable over the prior art. In addition to the arguments already set forth in the previous responses to office actions, Applicant's remarks are provided below.

Gandolfi, alone or in combination with *Nagano*, fails to disclose "wherein one of first and second tubes is bonded inside the other of said first and second tubes and is in contact with said first highly corrosive fluid flowing inside said at least one tube bundle, and the other of said first and second tubes is in contact with at least said second fluid flowing outside said at least one tube bundle," as claimed in amended claim 1.

In particular, although *Gandolfi* discloses the use of a tube bundle apparatus for processing corrosive fluids, *Gandolfi* does not disclose the features recited in amended claim 1. *Gandolfi's* external layer is not disclosed as being either titanium or zirconium and, instead, only the internal layer may be either titanium (or titanium alloy) or, in the alternative, zirconium (or zirconium alloy). See *Gandolfi*, Abstract. In other words, according to *Gandolfi*, titanium and zirconium are not combinable in the same tube bundle, but are merely presented as alternative materials to be used for lining a stainless steel tube. Additionally, *Gandolfi's* external layer is thick stainless steel and is stated to be "suitable for tolerating the difference in pressure between the inside and outside of the tube." See *Gandolfi*, page 2, lines 1-5 and page 18, lines, 9-15. *Gandolfi* simply does not disclose the simultaneous use of only titanium or titanium alloy tubes in conjunction with zirconium or zirconium alloy tubes without the use of stainless steel. A person of ordinary skill in the art would understand from *Gandolfi* that stainless steel is necessary for the external layer of the tube because of its ability to withstand the pressures involved, and because stainless steel is low cost, and easily commercially available. There is no teaching to suggest that the titanium or zirconium can be used to contact the steam flowing outside of the tube bundle, which does not contain highly corrosive fluids, and therefore there is no reason for a person of ordinary skill in the art to modify the tube bundle of *Gandolfi* to arrive at the presently claimed features.

Nagano, which is relied upon for teaching titanium hot-drawn with zirconium, would not have been combined with *Gandolfi* since *Gandolfi* excludes the possibility of providing a tube made of both titanium and zirconium combined. See *Gandolfi*, Page 18, line 6. This would be the case even if one of ordinary skill in the art would have known that zirconium might be electrolytically deposited on a surface of titanium to prevent corrosion of the latter. Such an electrolytic deposition method would not have been taken into consideration by one of ordinary skill in the art aiming to improve the tube bundle of *Gandolfi,* since he would have recognized that no uniform, practicable internal wall could have been obtained through the method of *Nagano*. This should be regarded as a clear indication that such materials were not prima facie combinable in connection with a tube bundle. Furthermore, even if a person of ordinary skill in the art were to have combined the teaching of *Nagano* and *Gandolfi*, the combination of titanium and zirconium

would have been used only on the interior of a stainless steel tube in accordance with the teaching of *Gandolfi*.

With respect to the Examiner's response to the Applicant's previous arguments previously filed on March 7, 2011, the Examiner stated that the substitution of the term "layer" with "tube" does not impart a structural change to the zirconium material. A tube is an entirely different mechanical structure in comparison to a layer. Thus, the Applicant respectfully disagrees with the Examiner on this issue. For the foregoing reasons, claim 1 defines over the prior art and is allowable. Claims 2-6 and 8-13, which depend from allowable claim 1, are likewise allowable. Thus, the Examine is respectfully requested to withdraw the rejection of claims 1-6, and 8-13 under 35 U.S.C. §103.

With regard to new claim 13, *Gandolfi*, alone or in combination with *Nagano*, fails to disclose "wherein said zirconium or zirconium alloy tube extends in said at least one titanium or titanium alloy tube starting from an entry end towards an opposite end thereof, for a portion between 10 and 20 percent," as claimed in claim 13. *Gandolfi* discloses bordering the internal surface of the cavity with at least 25% or preferably at least 40% of the surface with titanium or zirconium, however, *Gandolfi* does not disclose extending zirconium or zirconium alloy for a portion between 10 and 20 percent. See *Gandolfi*, page 22, lines 9-13. As noted above, *Gandolfi* only teaches an external layer that is made of stainless steel and does not disclose an external layer that may include titanium, zirconium, or an alloy thereof. More specifically, *Gandolfi* specifically requires the use of three layers: an external layer, an intermediate layer, and an internal layer. See *Gandolfi*, page 21 and 22. The external and intermediate layers of *Gandolfi* are only made of various types of steel, and only the internal layer may be made of titanium or zirconium. Thus, new claim 13 defines over the prior art and is allowable and the Examiner is respectfully requested to withdraw the rejection under 35 U.S.C. §103.

II. Conclusion

Applicant has made every effort to present claims which distinguish over the prior art, and it is thus believed that all claims are in condition for allowance. Nevertheless, Applicant invites the Examiner to call the undersigned if it is believed that a telephonic interview would expedite the prosecution of the application to an allowance. In view of the foregoing remarks, Applicant respectfully requests reconsideration and prompt allowance of the pending claims.

Respectfully submitted,

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